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Insect control conditions in the Figueroa Area, Santa Barbara National Forest Service

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INSECT CONTROL CONDITIONS IN THE FIGUEROA AREA, SANTA BARBARA NATIONAL FOREST

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INSECT CONTROL
CONDITIONS IN THE FIGUEROA AREA
SANTA BARBARA NATIONAL FOREST

General Description of the Area

The ponderosa and Coulter pine forest on Figueroa Mountain presents one of the interesting islands of coniferous type that are found in the western part of the Santa Barbara National Forest. In general, the type forms a rather narrow belt of pine extending from Zaca Lake to Ranger Peak, an air-line distance of about 8½ miles. It follows the summit of the range of which Figueroa Peak is the dominating point, with an elevation of 4,500 feet.

This belt of pine type, which is estimated to contain about 2,600 acres, is broken into three separated areas which bear the local term of "pineries".

No general stand estimates are available. Little or no commercial value can be attached to the timber, due to its isolation, the restricted area, and the open, scattered character of the greater part of the stand.

The East Pinery, lying northeast of Ranger Peak, contains about 400 acres of the ponderosa-Coulter type. Much of this is pure ponderosa pine which resembles strikingly in form the east-side pure type of commercial timber in northern California. In canyons and northern exposures there is a considerable amount of bigcone spruce.

The Figueroa Pinery contains about 1,100 acres. Ponderosa pine occurs only on the flat areas along the summit of the ridge, and covers not over 200 acres. The balance of the type is Coulter pine in mixture with oak and brush species. The Coulter pine stand is open, sparse and broken by many irregular non-timbered patches.

The West Pinery extends along the Zaca Peak ridge and down into Zaca Lake Canyon, covering about 1,100 acres. The type is altogether Coulter pine except for a very small area of bigcone spruce on Zaca Peak. The stand is very light and much broken up by irregular openings.

Tree-Killing Insects

Ponderosa pine and Coulter pine are the only known hosts of the western pine beetle (Dendroctonus brevicomis), and it is this insect that has caused by far the greater part of the timber losses on the Figueroa area. No special preference seems to have been shown for either tree species.

An engraver beetle (Ips confusus) has at times been the cause of very general topkilling in the area, particularly in Coulter pine.

Still another insect, the pine flathead borer (Melanophila sp.) causes occasional killing of weakened or slow-growing trees and augments the more serious losses due to the western pine beetle.

History of Past Infestations and Control Work

Due to complete isolation from any other areas of pine, the three small areas of pine type described above can be considered as a fairly complete entomological unit. Mission Pine Mountain, some ten miles to the east, is the nearest area of similar type from which a supply of beetles might come to reinfest the Figueroa pineries. Due to the distance and the intervening rough brush country, the probability of beetles coming in any numbers from outside the Figueroa area seems quite unlikely.

Because of these conditions the area has been considered by the Bureau of Entomology for experimental purposes, as a result of which some records of past infestations are available. In 1919 the area was first cruised by Ralph Hopping and the writer, and subsequent cruises were made annually until 1924. During February 1922 all infested trees that could be located were cut and treated by the Bureau of Entomology. The object of this control work was to try out the possibility of complete eradication of the western pine beetle within the area. This work was followed by another clean-up in February 1923. The record of this work is to be found in a memorandum by the writer to Forest Supervisor Jordan under date of July 6, 1924.

The volume of infestation as recorded during this period is shown in the following table:

Year	No. Trees Killed	Total Volume B.M.	
1918	35	21,000	
1919	34	24,090	
1920	23	13,830	
1921	79	38,560	
1922	65	30,720	(winter brood treated)
1923	13	7,100	do

The effect of these two control campaigns in 1922 and 1923 was to reduce the western pine beetle to a very low point within the area, but complete eradication was not secured. It was found that the physical conditions of the area presented difficulties which made control work of this experimental type quite expensive. Outlying trees in deep canyons were difficult to reach, and as there was no transportation throughout the length of the area except by trail the job required the maintenance of pack stock to carry it on effectively. A number of windfalls occurred in the winter of 1923, all of which would have to be peeled to insure against another building-up of the beetle population in the area. For these reasons the Bureau of Entomology did not attempt to continue the eradication experiment.

Following 1924 control work has been carried on from time to time by the Forest Service, mainly to protect the cover for the camp-grounds and the special-use area to the east of the Figueroa Ranger Station.

Several small allotments of less than $150 were made during the period from 1927 to 1930, mainly to supplement the contributed time of forest officers. No records of this work are available in the Regional Office, but it is apparent that no attempt was made to work the area as a whole. The cutting of infested trees was localized in the Figueroa Pinery so as to cover the camp grounds and surrounding territory.

In the winter and spring of 1930-31 a small unemployment camp, was located near the camp grounds for the purpose of cutting snags and infested trees in the area. This work was also localized and resulted in treating only a part of the infestation in the unit. Altogether 90 dead snags were felled, and an equal number of infested trees were cut and the bark either peeled or burned.

Character of Infestation During Seasons of 1931 and 1932

In company with District Ranger Case and his assistant the writer spent November 4 and 5, 1932, in an examination of the Figueroa Area and the East Pinery. Part of the trees that had been killed in 1932 were marked and a general impression secured of the type of infestation that has developed in these two areas during the seasons of 1931 and 1932.

From these observations it was apparent that the season of 1931 was marked by a very aggressive outbreak of the engraver beetle, Ips confusus. A large number of trees were topkilled, many of them occurring in groups. This Ips infestation appears to have been especially severe in the Coulter pine area south of Figueroa Mountain. The western pine beetle, although as epidemic as Ips, was on the increase during the season and attacked not only occasional injured trees, but also supplemented the Ips infestation by attacking the green bole below the topkill.

During the season of 1932 the Ips infestation subsided and very little topkilling occurred. However, the western pine beetle has been decidedly on the increase, and more trees were killed than for any other season on record. The amount of flathead borer infestation remains in an endemic state, although it appears to be on the increase in Coulter pine.

East Pinery

The western pine beetle has been building up to an epidemic status in the East Pinery, where most of the recently-killed trees were examined and marked. In the cruises carried on up to 1924 losses have always been light, not more than five or six trees being killed annually. In the clean-up of 1923 it was apparently exterminated in the East Pinery, as no winter brood trees were found. In the November 5 examination of 1932, 41 trees were marked in the central part and 37 trees spotted in the outlying type of the East Pinery, all having been killed during the 1932 season. The progress of the infestation is shown by the following tabulation:

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Year	No. of Trees	Volume B.F.
1930	1	3,320
1931	5	6,390
1932 summer brood	55	52,150
1932 winter "	23	15,190 (up to Nov.5)

This shows a total of 78 trees with a volume of 67,340 killed in 1932. These losses for 1932 are not complete, however, as the beetles were still active when the examination was made November 5, and there were undoubtedly recently-attacked trees on the area which were not found. The attacks of both summer and winter broods occurred in groups of 8 to 12, and the larval broods in the winter trees appeared to be unusually vigorous. As an estimate, there will be at least 50 overwintering-brood trees in the East Pinery which should be treated during the coming winter and spring if control work is undertaken.

Figueroa Pinery

In the Figueroa Pinery the western pine beetle infestation was much less aggressive. Sixteen trees were marked as killed in 1932 and 25 more were counted, making a total of 41, mostly Coulter pins. No large groups were found, the infestation occurring mostly in single trees.

West Pinery

No examination was made in the West Pinery. From the Figueroa Lookout very little recent infestation could be seen in the eastern part of this area, but the Zaca Lake district was not visible from this point.

Results of 1931-32 Control Work

Control work by the unemployment camp in the spring of 1932 was combined with snag disposal and general campground clean-up. I should estimate that the work covered from 500 to 600 acres on the south slopes of Figueroa Mountain. All trees that could be detected within this zone were treated, but a good deal of outlying infestation was left.

From all indications this control work has checked the western pine beetle infestation only locally. In and around the camp grounds conditions show an improvement over those of last year, and the appreciable reduction in losses can undoubtedly be attributed to the effects of control work. However, the work was not effective in checking the infestation on the entire unit, and reinvasion of the control area from infested trees left in the surrounding territory has been going on during the past season.

As no entomologist was assigned to help in the planning and direction of this small project, and the local forest officers were left to their own resources as to its technical phases, I do not feel that there is any ground for criticism of the local force for the manner in which the work was carried out. In fact, a very good job was done on the limited area that was covered. The two factors which I believe were responsible for the unsatisfactory character of the results are the following:

1. Concentration of effort upon trees that were topkilled only by Ips. A number of trees appear to have been cut which at the time had only the upper part of the crown killed, and a considerable length of green bole was left. This green trunk was later attacked by the first flight of Ips in the spring. These logs were then peeled while the broods were in the parent adult, egg and young-larval stages.

Treatment of Ips-killed trees in campground areas is considered to be good practice, but mainly as a clean-up measure. Because of the sporadic character of the outbreaks of this insect, control work against broods in standing trees has little effect upon the course of subsequent infestation, and benefits are transient. As a matter of fact, there has been a marked decline in 1932 of the Ips infestation outside of the area where control work was done, and quite a number of topkilled trees are surviving. It is reasonable to expect that some of the topkilled trees that were cut would have survived if they had been left, unless subsequently attacked by the western pine beetle or the flat-head borer.

2. Failure to treat the western pine beetle infestation over a large enough area to reduce the population effectively. Both the Figueroa and the East Pineries should be worked as a unit in order to have much effect upon this infestation.

Proposed Control Work for Winter and Spring of 1932-33

If further control work is undertaken, it should be planned with the purpose of attacking all the western pine beetle infestation in the area. At the present time Ips is a minor factor in the situation and control work against this species can be considered as a secondary phase of the project.

The future course of the infestation, if no further work is done, cannot be predicted with any certainty. At present the worst western pine beetle center is in the East Pinery. The pure ponderosa pine type in this little area is fairly mature, and offers ideal conditions for an epidemic to continue until the stand has been very heavily thinned of the more mature trees. If the western pine beetle continues at the present rate of increase it will be only a few years until this condition is reached in the East Pinery. In the Figueroa Pinery the heaviest losses are in Coulter pine, and a high per cent of the trees around Tunnel Ranch south of last winter's control area have been killed. Much active infestation was noted in that part of the area in the recent examination. Several winter-brood trees were found with foliage still in green condition, indicating that a good many winter-brood trees had not yet faded.

The question of whether values in this area are high enough to warrant a much larger control program than was undertaken last winter will have to be decided before further allotments can be recommended.

If further work is undertaken, provision should be made to treat all infested trees in the Figueroa and East Pineries during the coming winter. As a preliminary estimate, this will involve the treatment of from 100 to 150 trees. The two areas should compose a fairly complete infestation unit, but the West Pinery should also be cruised, and control work extended to the west as far as Zaca Peak if any number of infested trees are found in that part of the area. A project on this scale should give fairly complete protection to the Forest Service values around Figueroa Mountain and protect the stand left in the East Pinery.

Work in the Zaca Lake district cannot be carried on to advantage unless owners of the private land cooperate. If this cooperation is assured, a cruise of the area should be made to determine the amount of work that will be necessary on both Forest Service and private ownership. These steps will be necessary before a definite allotment can be recommended.

Control work, however, can be recommended on the East Pinery and Figueroa area for protection of the Forest Service values only. Cost per tree will be high, due to the great hazard of burning infested bark during the winter. Burning has been a difficult problem in all previous work on Figueroa, due to high winds and rapid drying of the area after a storm. With an outside estimate of 150 trees to be treated this winter, I estimate that an allotment of $750 will be needed for the job. This estimate assumes that contributed time of forest officers will be available for supervision and that day wages will be paid for labor.

Photo No. 1

Looking east from Figueroa Lookout. Timber in the foreground is mostly Coulter pine, classed as mixed type in the type map. In the distance is the East Pinery, a small body of pure ponderosa pine with complete isolation from any areas of similar type.

Photo No. 5

Ponderosa pine in the Figueroa Pinery. The area occupied by this species is much less than in the East Pinery, and the timber is not of as high quality.